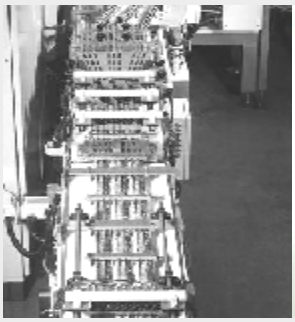

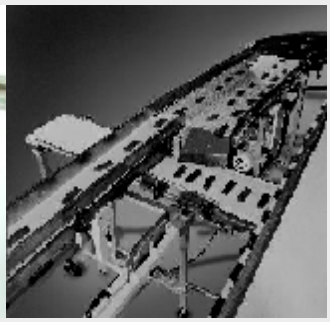

Operating Instructions

Control Units for Belt Drives

EBC 3000

BA

Rhein-Nadel Automation GmbH

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Declaration of Conformity
in terms of the Low Voltage Directive 2006/95/EC
and the EMC Directive 2004/108/EC

We herewith declare that the product is in conformity with the following provisions:

Low Voltage Guideline 2006/95/EC
EMC Directive 2004/108/EC

Applied harmonised standards:

DIN EN 60204 T1
EN 60439-1

Comments:

Rhein-Nadel-Automation

Managing Director
Jack Grevenstein

CE

1 Technical Data

1.1 Functional description

The control unit EBC 3000 was developed to operate the RNA mini-band conveyor FP 15. The applied pulse width modulation generates high efficiency and good start-up characteristics through a near 1 form factor. All operating controls including the plug-in device for the motor connection are arranged on the front panel.

A switched-mode power supply in accordance with VDE 0551 generates the operating voltage of max. 24 volts for the belt drive, so the motor voltage is a **contact-safe protective extra-low voltage.**

An internal current scanning (I x R compensation) equalizes speed fluctuations when the load on the conveyor belt changes.

* Minimum and maximum output voltage, U_{min} und U_{max}, as well as maximum motor current, I_{max}, are continuously adjustable on the board.
* The conveyor belt can be powerlessly started and stopped over additional wiring.
* In addition, one can regulate the target value over an external 0-10V or 0-20mA signal.
* Over a voltage-free contact, one can reverse the sense of rotation of the connected motor.
* The control unit is designed for a mains voltage from 110 volts AC to 230VAC. The control unit checks the mains voltage and adjusts itself automatically.

1.2 EC Conformity

The control unit complies with the following regulations:

EMC Directive 2004/108/EC
Low Voltage Guideline 20065/95/EC

Applied harmonised standards:

EN 60204, T.1
EN 60439-1

1.3 Technical data

Power supply	230V; ± 10%; 50 / 60 Hz or 115V; ± 10%; 50/60 Hz
Primary fuse	5 x 20; 2A medium time-lag
Output voltage	0...28 V DC
Output current	0.4...2 A
External adjustment	0-10V 0-20mA
External release	over a voltage-free contact or 24 V voltage signal
Case dimensions	210 x 90 x 150 (H x W x D)
Interference suppression and resistance to jamming	conformity in accordance with EMC Directive
Type of protection	IP 54
Ambient temperature	0...50C°

2 Safety Instructions

The safety instructions must always be read and understood. Observance of these instructions ensures that valuable material is maintained and damage to health avoided.
One must make sure that every person working with this control unit is acquainted with the safety instructions and also follows them.
The unit described here is a controller for the operation of RNA belt drives. The limiting values in Technical Data are to be observed.

Note!
This hand indicates that there are tips on how to use the control unit.

Attention!
This warning triangle indicates safety instructions. Non-observance of this warning can result in serious injuries or death!

Work on electrical equipment of the machine/installation may only be carried out by a qualified electrician or by an instructed person under the directions and supervision of a qualified electrician according to the electrotechnical regulations!

Please observe all notes on safety and danger on the machine/installation!

The electrical equipment of a machine/installation is to be inspected and checked regularly. Defects like loose connections or damaged cables must be eliminated immediately!

Before putting the machine into operation, one must make sure that the protective conductor (PE) is installed at the connecting point and that it is intact. Only approved testing equipment may be used to check the protective conductor.

3 Starting Instructions

Before connecting to the mains and switching on the control unit, the following points must be checked:

- Is the control unit properly closed with all its screws?
- Are the existing plug-in fixing devices locked into place / screwed tight?
- Are all cables and bushings intact?
- Is the INTENDED USE guaranteed?
- Does the indicated supply voltage on the control unit conform with the local power supply network?

The control unit may only be put into operation if all above questions can clearly be answered with Yes.

3.1 Basic factory setting

The control units are set at the works as follows:

- Minimum output voltage: 4.9 volts;
- Maximum output voltage: 25.5 volts;
- Maximum load current: 1.5 amp.

In special cases or after modifications, a readjustment may become necessary, for which the following must be observed:

The maximum output voltage and the maximum load current for the conveyor belt FP 15 may not be adjusted higher nor may the minimum output voltage be adjusted lower than indicated above.

It is also important to note that the potentiometers for the output voltage are not reactionless towards each other. This means that a change in the maximum voltage also slightly changes the minimum voltage – and vice versa. Therefore, it is possible that both potentiometers may have to be adjusted several times.

3.2 External adjustment with 0-10V or 0-20mA

Before connecting, the right-hand side panel of the unit has to be opened.

Before opening the control unit
pull the mains plug!
Then wait 10 min. until the power pack is discharged.

Connection is done on the XK1 terminal strip.

In control mode with 0-10 volts
onto terminal XK1.3 +10 volts
Terminal XK1.5 GND

In control mode with 0-20mA
onto terminal XK1.4 +20mA
Terminal XK1.5 GND

3.2.1 Reversing mode

Before connecting, the right-hand side panel of the unit has to be opened.

Before opening the control unit
pull the mains plug!
Then wait 10 min. until the power pack is discharged.

To activate the reversing mode, connect a voltage-free contact onto terminals XK1.9 and XK1.8. When switching the sense of rotation, the motor stops a moment and then starts in the opposite moving direction at the set speed. If the sense of rotation is reversed without switching or if the contact is open, the motor will run in the set sense of rotation.

3.3 Release of the function through external components

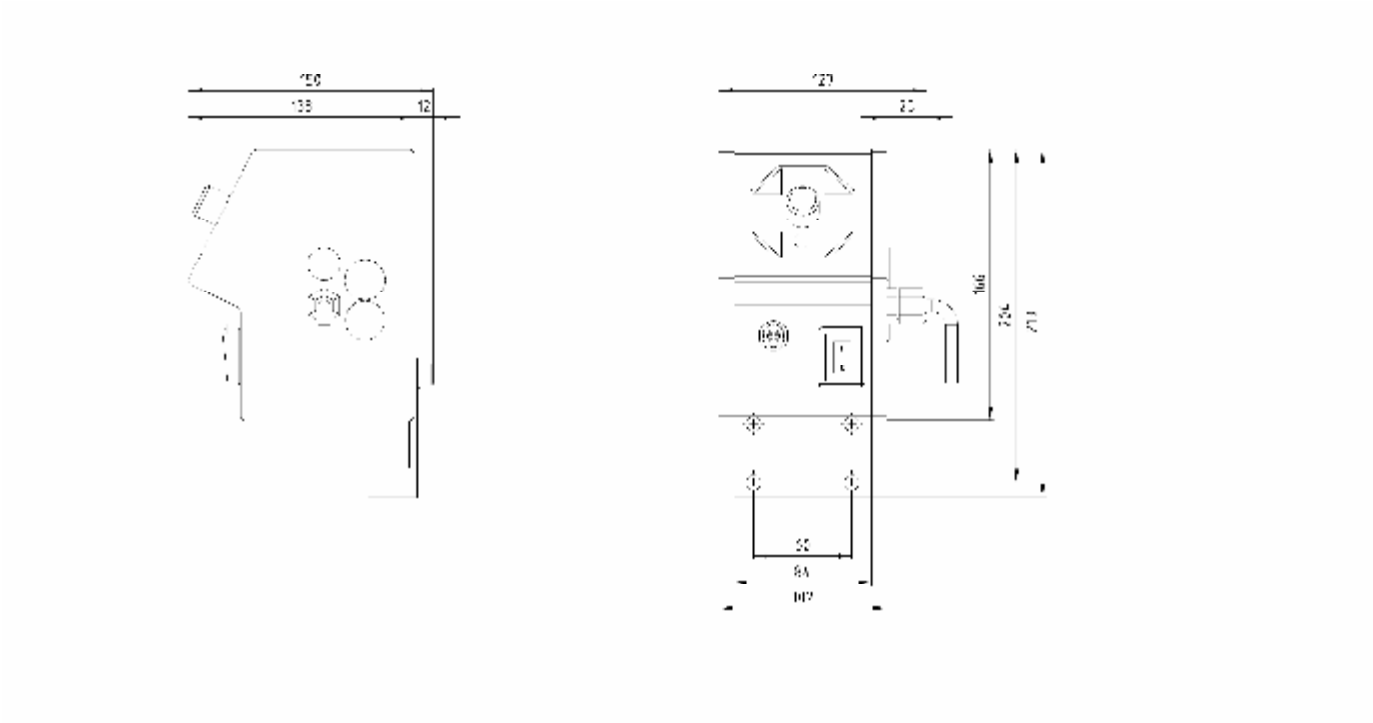
The standard adjustment of the control unit makes sure that the oscillating belt drive starts when the mains switch is switched on. If the control unit is to operate without disconnection from the mains in the Start-Stop mode, the control unit is to be opened by observing the above-mentioned safety notes. The blind plug at the side of the case replaces a screw fitting with strain relief size M16. This is where the cable for the release is lead through. There are two possible ways of performing a release:

Release through a contact
The way this simple and economical solution works is that a contact releases the control unit by closing and the belt drive runs. The connection is made on terminals 7 and 9; the jumper put in at the works is to be removed. At the same time, please remember the following:

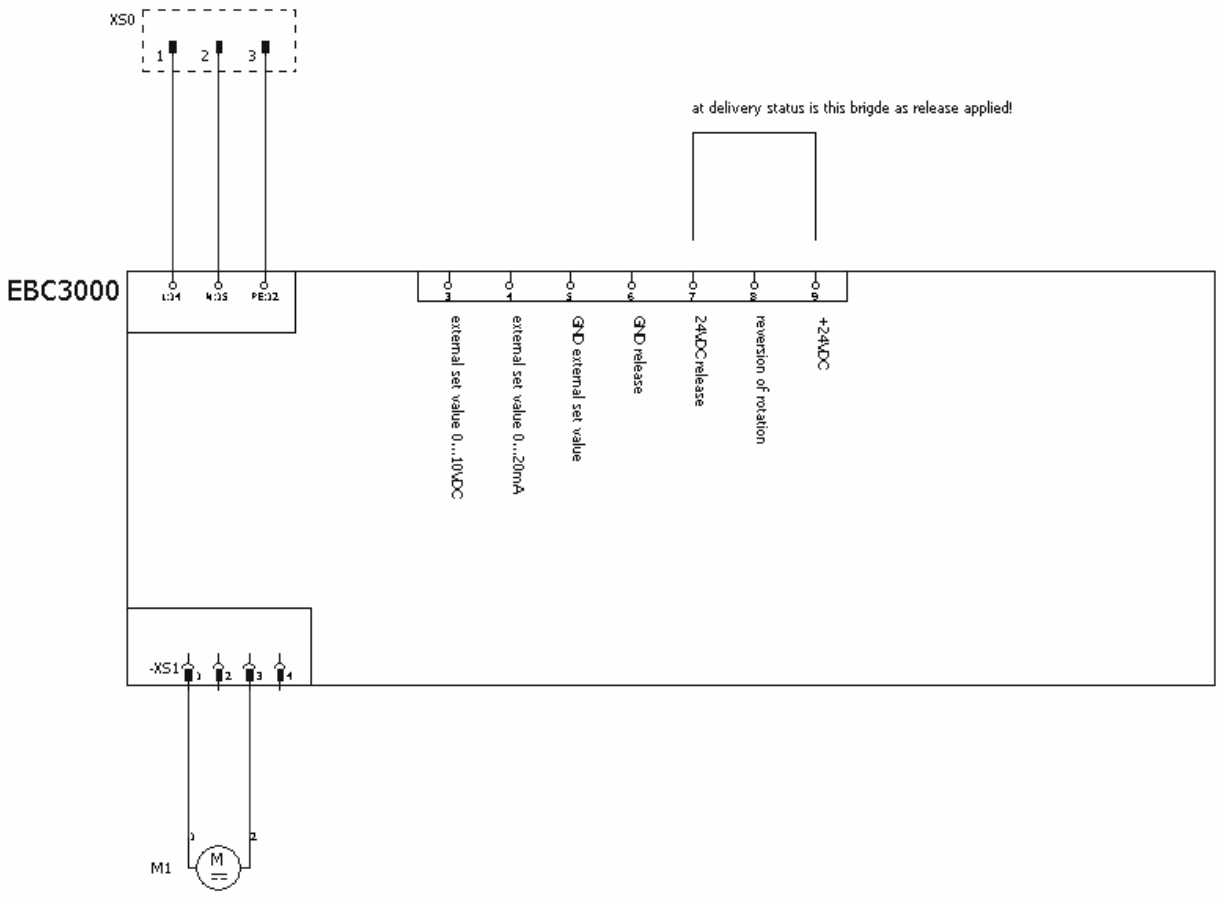
- There is voltage in the connection! Cable type and colour as well as insulation regulations must be observed; the contact must, of course, be voltage-free.
- The cable may not be installed in the immediate vicinity of high-energy switching equipment or strong interference fields.

Release through a voltage signal
The signal is connected to terminals 6 - and 7 +; the jumper, i.e. terminals 7 and 8, have to be removed. The drive starts when there is a signal between 10 and 30 volts DC in correct polarity. The input is protected against wrong polarity. The use of an optocoupler in the control unit makes the input voltage-free and allows one to install unshielded cables of almost any length. However, high-energy interferences must be avoided here too.

4 Dimensioned Drawing



5 Connection Diagram



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